

A TENTATIVE CHART OF ANNUAL RAINFALL OVER THE ISLAND OF HAITI-SANTO DOMINGO

551.578.1 (084.3)
(729.4)

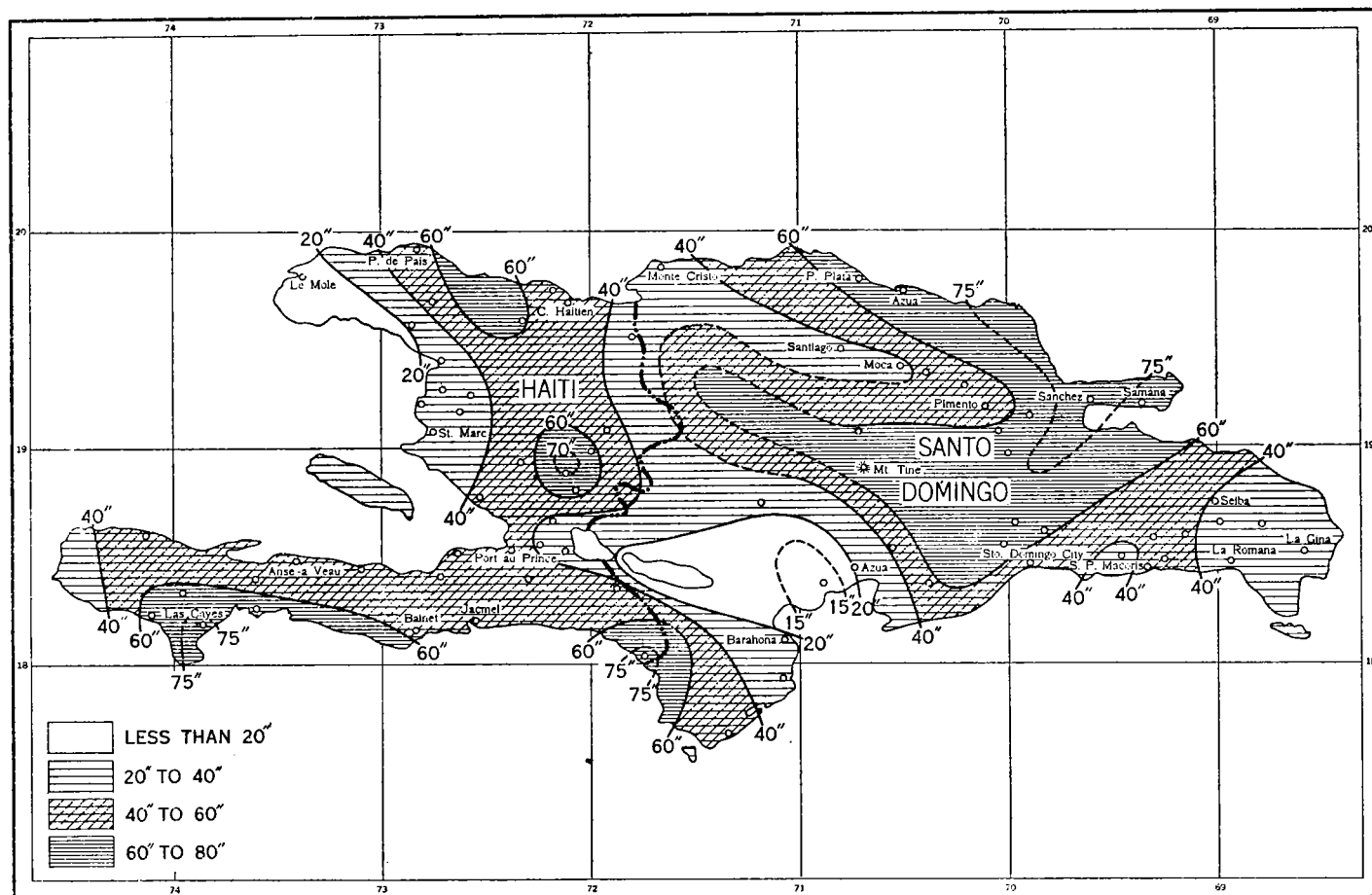
By OLIVER L. FASSIG

[Weather Bureau, San Juan, P. R., July 17, 1929]

Observations are available covering a period long enough to afford a fairly accurate picture of rainfall distribution over Haiti. For Santo Domingo, comprising two-thirds of the island, we have records of but few stations for more than 10 years. The accompanying chart is offered as only a first attempt to show the average distribution of rainfall over the entire island.

The distribution over Haiti is based upon the average annual values for 27 stations with records of 10 years or

more and covering an average period of 18 years. The distribution over Santo Domingo is based upon records at 50 stations, averaging 7 years. As much of the western portion of Santo Domingo is without rainfall stations in the interior and mountain districts, the contour lines must be only estimates, but large rivers and luxuriant vegetation indicate a heavy rainfall in the central mountain district, while desert conditions show a very light rainfall in the southwest and northwest sections.



Tentative chart of annual rainfall over the island of Haiti-Santo Domingo

A WATERSPOUT IN MOBILE BAY, JULY 27, 1929

By ALBERT ASHENBERGER

A waterspout first noticed at 9:13 a. m., July 27, 1929, occurred in Mobile Bay and in Chacalooche Bay, a northern arm, after suspension of the phenomenon for a short period subsequent to reaching the Cochrane Bridge roadway, which partly separates the two bodies of water.

When first observed it had the aspect of a tall, extremely slender column of dark grayish color rising perpendicularly from a level water surface to the horizontal base of a very dark stratus cloud. The upper end was twice the width of the lower and no mound of spray at the water surface was discernible. The spout as it advanced rapidly leaned forward, while the upper half decreased in diameter and the lower portion increased an equal

amount; and at 9:17 a. m., when it had reached very close to the roadway, it appeared as a straight column of uniform diameter inclined forward about 30° from verticality. The column then quickly became sinuous, the upper and lower portions being almost vertical and the intermediate section inclined forward at an angle of about 45°.

At 9:18 a. m. the phenomenon had disappeared by receding to the clouds; however, it is probable that the vortex had only decreased in energy, as two minutes later the upper portion of the spout reappeared and, extending downward, resumed at 9:22 a. m. the same shape as when it had disappeared, but there was now visible a

disklike formation, probably of spray but possibly including leaves and dead weeds from the bridge roadway. The cylindrical formation was apparently five times the diameter of the spout which reached its center, and about 40 yards high as compared with the tops of trees on the opposite shore of the bay. This phase continued until 9:28 a. m., when the shore line was reached.

Mr. Dann E. Jett, who heard a roaring noise and observed the phenomenon from a distance of about 200 feet east of its path when it reached the Cochrane Bridge roadway, which is about 150 feet in width and 5 feet higher than the water level, estimated the spout was fully 50 feet in diameter. He saw it sustain at a height of about 10 feet several pieces of 3-inch pine lumber 18 feet in length and 6 to 10 inches in width, causing them to rotate counter-clockwise in a nearly horizontal plane before dropping them a few feet from their original location on the south side of the roadway.

Cloudy weather prevailed after 6:10 a. m., the sky being overcast with lower clouds after 8:20 a. m., light rain fell from 8:10 a. m. to 9:20 a. m. and from 9:40 a. m. to 10:55 a. m. The clouds near the waterspout apparently moved in the same direction as the spout,

but subsequently appeared to spread eastwardly. Barometric pressure was nearly stationary rising from 30.08 inches at 7 a. m. to 30.09 inches at 10 a. m. The wind movement until 11 a. m. averaged 3 miles an hour with a maximum speed of 9 miles an hour during about 8:20 a. m. The direction was from the west. A thunderstorm coming from the east occurred after the waterspout. The first thunder was heard at 9:56 a. m., the loudest at 10:21 a. m., and the last at 10:43 a. m.

The bearings and the angular altitude of the spout were taken from the Weather Bureau office window and, used with data secured from Mr. Jett and other spectators, it was practicable to plot the path on a map and determine dimensions. The spout moved 3 miles at 12 miles an hour in a direction north $29\frac{1}{2}^{\circ}$ east from the point first noticed, 6,270 yards from the Weather Bureau office, and it had traveled 5.2 miles in the same direction before reaching this location. Its height was 937 yards and its approximate diameter as determined by comparison with a bridge tower was 35.6 feet at the lower end and 71 feet at the upper end, subsequently changing to a uniform diameter of 53 feet.

L. H. NICHOLS ON METEOROLOGICAL AND FOREST-FIRE HAZARD CONDITIONS IN THE PROVINCE OF QUEBEC¹

551.5 : 634.9.43
(714)

By M. F. BURRILL

This paper is a report by Professor Nichols covering an investigation carried out in the summer of 1928 under the auspices of the Quebec Forest Industries Association. The objects of the investigation were:

(a) The making of an estimate of fire hazard on reports furnished by the Meteorological Bureau of Toronto and by the aid of any experiments which should suggest themselves * * *

(b) To study the possibility of developing and improving "weather forecasts" and the determining of fire hazard.

(c) To study the useful lines along which research work could be carried out in connection with forest fires—collection of statistics, etc.

Professor Nichols felt that he should not accept without verification any of the work done by Americans because "in general it seemed certain that conditions controlling forest fires in the Province of Quebec would be found to vary widely from those obtaining in the Western States on account of differences of climate, forest types, and colonization policies," and also because representative pamphlets and papers on the subject "revealed a certain vagueness of thinking and a very considerable repetition of well-established dogmas which were applicable on the whole to sections of the western half of the United States and to isolated parts of the New England States."

The "attack on the problem was directed along three main lines:

"(a) A visit to each main area and humidity station.

"(b) Physical experiments in the forest to assist in drawing a conclusion as to 'fire hazard.'

"(c) A study of the precipitation of past years at Montreal and Quebec to see if there was any traceable law in occurrences of years of deficient precipitation and a study of the weather of the last 'fire year.'"

Of the 11 humidity stations, 8 appear to have records representative of the surrounding country. Considerable difficulty has been experienced in securing complete, carefully taken records. "After a careful study of the humidity records," the author "failed to find any marked differences among them."

A special study at Caribou Depot (southern St. Lawrence) and at Mistassini (Laurentian) "found out that the winds from northeast, south, southeast, south, and southwest, were the most probable origin of moisture. The winds from the west, northwest, and north were lacking in moisture as a rule.

Much remains to be done in local and district forecasting. Little effort was made during the summer to check the accuracy of district forecasts from the Toronto office. The present fire forecast areas are: (1) The Ottawa Valley; (2) the St. Maurice Valley, Lake St. John; (3) the Laurentian or North Shore; (4) the southern St. Lawrence, including Gaspé. It is suggested that a new forecast area be established covering the territory from La Tuque to the Ontario line and northward.

To clear up all the vague notions of fire "hazard" Professor Nichols had confined the use of the term to "*the conditions of moisture content and inflammability of the dead forest materials which carry fire and spread it.*" It is true that—

graphs have been produced showing almost perfect correlation between fires observed and low relative humidities, but since we are in this case dealing with human intelligence the results have little more value than to prove conclusively that settlers and colonists know when it is a dry day and set their fires accordingly. There is some correlation also between fires in the bush and low relative humidity, but there are many occasions when there was low relative humidity and no fires so that we see that we must be reckoning with other factors.

To determine the other factors Professor Nichols experimented in the bush. Doubtful of the accuracy of duff hygrometers, he cut out pieces of the forest floor 18 by 12 by 1 inches, put these into wire letter trays, replaced them and weighed them, apparently at intervals, with a spring balance. With the bone-dry weight calculated from the weight of a dried inch-thick sample, the water content was the excess over dry weight.

The weight determinations, compared with the readings of the meteorological station, formed the basis of informative graphs which have capabilities of yielding considerable information not otherwise conveniently obtainable and *not hitherto obtained* in this Province.

It was found, also by experiment, that 10 per cent moisture content was near the starting point of inflammability by contact with a blazing match. Therefore * * * bone-dry weight plus 10 per cent in the "danger line." Ten per cent of moisture content is associated in equilibrium with about 40 per cent relative humidity.

¹ Abstract of reprint from Pulp and Paper Magazine (Canada), Feb. 14, 1929. Quarto, 15 pp., including 4 plates.